**B.M. INSTITUTE OF ENGG. & TECH., SONIPAT**



**SESSION (2018-2022)**

SYNOPSIS

MINOR PROJECT

ON

"WORK FROM HOME DETECTION"

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**WORK FROM HOME DETECTION**

**PROBLEM STATEMENT**

To detect and verify user face who is working on machine (computer with camera) and maintaining a log file of his visibility and detection of face with the respective time and date and ensuring that they are doing work professionally.

**INTRODUCTION**

Due to coronavirus pandemic all the employees are doing work from their home. The employees aren’t getting the good environment for working from home. This could be a loss for a company as they don’t get to know is their employees are doing there work sincerely or not.

It's hard enough to hold productive in-person meetings to coordinate different team members' efforts to remain aligned. This **work from home challenges for companies** has created numerous **problems**. Miscommunication or partial communication can slow down decision-making and take the **business** for a few years.

The company face challenges like:

1. **Time Management Challenges**

When employees don’t have to wake up early, get ready, and travel all the way to the office, they have so much spare time – this was employees’ thoughts four months back. But, now they have realized without the proper timeline, their productivity and efficiency have deflated dramatically.

This has surged the problem of “work from home productivity challenges” for the companies. Employees aren’t trained to schedule their own time table, and they definitely don’t have the discipline to avoid all the distractions present in their home. The malfunction of timing has affected the performance of employees, which has eventually reduced their productivity.

Now, this monstrous issue can be handled with an easy solution. Companies should set a work timetable for the employees, the way they used to do before pandemics, but with the little twist of virtual tools.

Companies can use the attendance tool to measure employees’ attendance in real-time and allot them weekly or monthly work with strict deadlines. Now, employees know they have to complete a certain task in a given timeframe, and if they got delay, the software would automatically indicate them. So, when they have a tool to monitor their timely attendance and work schedule, they won’t feel out of focus and productivity won’t suffer much.

1. **Distraction Challenges**

The huge challenge of working from home for employees could be avoiding distractions. Yep, when employees are working from home, they have thousands of distractions to deal with. From a play station to playing with your dog, being an employee, you have many distractions lying around the home. For God’s sake, if you are women, you have some extra distractions laying your way as your kids are out of the school.

All these home distractions can be a challenge for both the employees and employers. To overcome the challenge of distraction, employees and employers both have to play their part.

Employees have to make a work corner in their homes where they don’t hear or see any distractions. Plus, they should complete all their domestic chores before starting the workday. Once an employee has logged into his or her company dashboard, they should stay focused and work with 100% dedication.

Employers need to set fixed working hours for the employees and don’t force them to work overtime. Moreover, to calculate the exact working hours of an employee, the monitoring software will be very helpful. The software will automatically record the time when employees are working or taking a break. This way, both employees and employers will know the exact working hours to avoid any conflicts. Moreover, employees can work to increase their working hours when they see low numbers, which reduces managers’ work.

1. **Supervision Challenges**

Now, this situation falls under the working from home challenges and benefits category. When employees are working from home, they have the liberty to work without any directions and supervision. It allows them to solve problems on their own and improve their analytical thinking abilities.

However, all the employees aren’t the same. Some employees need constant monitoring and supervision; otherwise, they will make wrong decisions that will eventually impact the reputation of a company. Thus, remote workers need to be monitored but ghostly.

Desktop monitoring software can be the perfect ghost monitoring solution. It will be recording all the employees’ activities and sending periodic screenshots to the employers so that they can monitor their activities. Moreover, this won’t disturb the employee in any way so he can work as per his will.

Furthermore, the software will generate a performance report based on regular monitoring. Employers can share this report with the employees so that they can analyze their mistakes and make efforts to avoid them. This will reduce the task of managers to provide frequent feedback to the employees. It is a win-win solution for remote task forces.

These things do affect a lot to a company pr organisation.

There is nothings can do company about those things they can only guess and could take actions.

**OBJECTIVE-**

To develop a small application which can detect face and verify presence for the current user and write it to the file and send to the head of the department through mail with dates and time.

**METHODOLOGY**

1. register the application if the user start first time or otherwise sign in with the respective user\_id and password.
2. Capture the image
3. Start camera.

**Face detection algorithm: Haar Cascade**

Stages in Haar Cascade Algorithm:

1. Haar Feature Selection- Features of the face like eyes, nose etc. Are selected and their values are computed. There are two parts in each of these features, white and black part. The white part represents the brighter part of face and the black part depicts the darker part of our face. Sum of pixels of white areas are subtracted from the sum of the black ones and their difference is provided to the next stage.
2. Creating Integral images- Integral images are created by cumulative addition of pixel values in both horizontal and vertical direction of a matrix. These are created so as to make the computation of haar like features faster and to reduce the number of operations.
3. Adaboost Training- The correctly classified part (denoted by +) of the image is separated from the wrongly classified part (denoted by -). More weightage is given to wrongly classified part as compared to correctly classified one, iterations are done and we get a final classifier as result.
4. Cascading Classifier-All the three stages are combined together and a properly trained classifier is ready.

**FACE RECOGNITION LIBRARY**

Recognize and manipulate faces from Python or from the command line with

the world’s simplest face recognition library.

Built using [dlib](http://dlib.net/)’s state-of-the-art face recognition built with deep learning. The model has an accuracy of 99.38% on the [Labeled Faces in the Wild](http://vis-www.cs.umass.edu/lfw/) benchmark.

This also provides a simple face\_recognition command line tool that lets

you do face recognition on a folder of images from the command line!

**SOFTWARE USED**

**Python :-** We have used python latest version “ 3.8.5” in the project.

**OpenCV :-** OpenCV (OPEN SOURCE COMPUTER VISION) is an open-source BSD-licensed library that includes several hundreds of computer vision algorithms.

**pip :- use pip** with an install command followed by the name of the package you want to install. **pip** looks for the package in PyPI, calculates its dependencies, and installs them to ensure requests will **work**. Notice that you **use** python -m to update **pip** . The -m switch tells Python to **run** a module as an executable.

**HARDWARE USED**

A windows system with webcam in it and hyper-v.

**EXPECTED OUTCOME**

The application is able to detect and verify the face of the user and create and update a log file which will be sent to the head before the application is closed .